

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1 (Currently Amended). A method for producing fullerenes, comprising:

a first process of imperfectly combusting or thermally decomposing a hydrocarbon fuel in a reactor, thereby producing a high-temperature gas flow containing fullerenes and soot;

a second process of introducing the high-temperature gas flow containing the fullerenes and the soot from said reactor into a first filter including a heat-resistant filtering element, to allow the fullerenes in a gaseous state to flow through said first filter, thereby collecting the soot from the gas flow in said first filter; and

a third process of lowering a temperature of the gas flow having just flowed through said first filter, in order to solidify the fullerenes, thereby collecting and separating the fullerenes from the gas flow,

wherein the gas flow after having flowed through said first filter is controlled in a temperature within a range between 300 and 600°C at which polycyclic aromatic compounds contained in the gas flow are held in a gaseous state, and fullerenes free of polycyclic aromatic compounds are collected using a second filter including a heat-resistant filtering element;

wherein the gas flow discharged from said second filter is cooled down to a temperature of 200°C or less by a gas-cooling apparatus, and is evacuated by a vacuum pump; and

wherein said reactor is an inverted reactor provided with a burner at an upper portion of said reactor for imperfectly combusting or thermally decomposing the hydrocarbon fuel and with an exhaust port at a lower portion of said reactor, through which the high-temperature gas flow containing fullerenes and soot is discharged to outside of said reactor.

2 (Currently Amended). [[A]] The method for producing fullerenes as defined in claim 1, wherein the high-temperature gas flow containing the fullerenes and the soot at an entrance of said first filter has a temperature falling within a range of between more than 600 to and 900 °C.

3. Cancelled.

4. Cancelled.

5. Cancelled.

6. Cancelled.

7. Cancelled.

8 (New). The method for producing fullerenes as defined in claim 1, wherein the heat-resistant filtering elements used for said first and second filters are made of heat-resistant sintered metal.

9 (New). The method for producing fullerenes as defined in claim 8, wherein said heat-resistant sintered metal is stainless steel.

10 (New). The method for producing fullerenes as defined in claim 1, wherein said first and second filters comprise gas-permeable apertures with sizes in the range of from 0.5 to 5 μ m.

11 (New). The method for producing fullerenes as defined in claim 1, wherein said first and second filters comprise gas-permeable apertures with sizes in the range of from 1 to 5 μ m.

12 (New). The method for producing fullerenes as defined in claim 1, wherein said first and second filters comprise gas-permeable apertures with sizes in the range of from 1 to 3 μ m.

Amendment Under 37 C.F.R. §1.111
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13 (New). The method for producing fullerenes as defined in claim 2, wherein the high-temperature gas flow containing fullerenes and soot at an entrance of said first filter has a temperature falling within a range between 700 and 800 °C.

14 (New). The method for producing fullerenes as defined in claim 1, wherein the reactor has internal pressure falling within a range between 20 and 200 torr.

15 (New). The method for producing fullerenes as defined in claim 1, wherein the reactor has internal pressure falling within a range between 30 and 60 torr.

16 (New). The method for producing fullerenes as defined in claim 1, wherein the reactor has internal pressure falling within a range between 30 and 50 torr.

17 (New). The method for producing fullerenes as defined in claim 1, wherein wherein the gas flow after having flowed through said first filter is controlled in a temperature within a range from 300 to 400 °C.

18 (New). The method for producing fullerenes as defined in claim 1, wherein the gas flow discharged from said second filter is cooled down to a temperature of 150°C or less.

19 (New). The method for producing fullerenes as defined in claim 1, wherein said high-temperature gas flow produced in said first process contains 5 wt.% or more of fullerenes.

20 (New). The method for producing fullerenes as defined in claim 1, wherein said high-temperature gas flow produced in said first process contains 10 wt.% or more of fullerenes.

21 (New). The method for producing fullerenes as defined in claim 1, wherein said high-temperature gas flow produced in said first process contains 15 wt.% or more of fullerenes.